Euphonix is AVID™

MC524

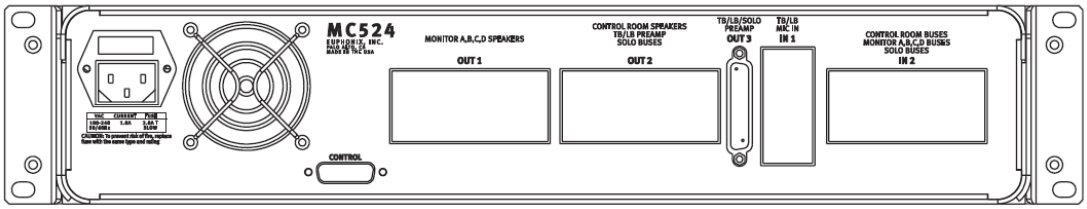
Monitor Interface

Installation Manual

Document Revision: A

Part Number: 840-11311-01

Release Date: August 2010



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Regulatory and Safety Notices

Warnings and Cautions

Never install equipment if it appears damaged.

Disconnect the power cord before servicing unit.

Only perform the services explicitly described in this document. For services or procedures not outlined in this document, speak with authorized Avid service personnel.

Follow all warnings and cautions in the procedures.

Operate the device within its marked electrical ratings and product usage instructions.

If you need to replace a battery in an Avid hardware unit, be sure to use the correct battery type. There might be a risk of explosion if a battery is replaced by an incorrect type. Dispose of used batteries according to the manufacturer's instructions.

FCC Notice

Part 15 of the Federal Communication Commission Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference free radio frequency spectrum. Many electronic devices produce RF energy incidental to their intended purpose.

These rules place electronic equipment into two classes, A and B, depending on the intended use.

Class A devices are those that may be expected to be installed in a business or commercial environment. Class B devices are those that may be expected to be installed in a home or residential environment. The FCC requires devices in both classes to be labeled with the interference likelihood and additional operating instructions. The rating label on the equipment will show which class the product is (A or B). Class A product will not have an FCC logo. Class B equipment will have an FCC logo. The information statements differ on the two classes.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to Avid hardware that are not expressly approved by Avid Technology may void the user's authority to operate the equipment.

Cables

Connections to Avid hardware must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

PRODUCTS WITH MULTIPLE POWER INPUTS:

WARNING: Each power input is intended to be connected to a separate branch circuit. Risk of high leakage exists if multiple inputs are connected to a single source and protective earth is not present. A QUALIFIED SERVICE PERSON shall verify that each socket-outlet from which the equipment is to be powered provides a connection to the building protective earth. If any do not provide this connection, the QUALIFIED SERVICE PERSON shall arrange for the installation of a PROTECTIVE EARTHING CONDUCTOR from the separate protective earthing terminal to the protective earth wire in the building.

Canadian ICES-003

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecté toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Declaration of Conformity

CE

Declaration of conformity

Konformitätserklärung

Déclaration de conformité

Declaración de Confomidad

Verklaring de overeenstemming

Dichiarazione di conformità

We/Wir/ Nous/WIJ/Noi:

Avid Technology

1925 Andover Street

Tewksbury, MA, 01876 USA

European Contact: Nearest Avid Sales and Service Office or

Avid Technology International B.V.

Sandyford Industrial Estate

Unit 38, Carmanhall Road

Dublin 18, Ireland

declare under our sole responsibility that the product,

erklären, in alleiniger Verantwortung,daß dieses Produkt,

déclarons sous notre seule responsabilité que le produit,

declaramos, bajo nuestra sola responsabilidad, que el producto,

verklaren onder onze verantwoordelijkheid, dat het product,

dichiariamo sotto nostra unica responsabilità, che il prodotto,

Product Name(s) : Monitor Interface

Model Number(s): MC524

Product Options: This declaration covers all options for the above product(s).

to which this declaration relates is in conformity with the following standard(s) or other normative documents.

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.

auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).

al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).

waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.

a cui si riferisce questa dichiarazione è conforme alla/e seguente/i norma/o documento/i normativo/i.

The requirements of the European Council:

Safety: Directive 2006/95/EC

EN 60065:2002 /A1:2006

EMC: Directive 2004/108/EC

EN 55103-1:1996

EN 55103-2:1996

LED Safety Notices

Avid hardware might contain LED or Laser devices for communication use. These devices are compliant with the requirements for Class 1 LED and Laser Products and are safe in the intended use. In normal operation the output of these laser devices does not exceed the exposure limit of the eye and cannot cause harm.

Standard to which conformity is declared: (IEC 60825-1)

Optical connections are located on the rear panel and are typically labeled “Optical” or “SPDIF/ADAT.” The exact location of optical connections is identified more clearly elsewhere in the documentation for the Avid hardware device.

Use of controls and/or adjustments or the performance of procedures other than those specified herein and elsewhere in documentation for the Avid hardware might result in hazardous radiation exposure.

Disposal of Waste Equipment by Users in the European Union

This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

Rack-mount Requirements

The following rack-mount requirements are listed below:

• Elevated Operating Ambient — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

• Reduced Air Flow — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Do not block vents.

• Mechanical Loading — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

• Circuit Overloading — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

• Reliable earthing — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Lithium Battery Replacement

If a battery is supplied in this Avid product it *must* only be replaced by qualified personnel. Contact Avid Customer Support for assistance.

WARNING

Danger of explosion if battery is incorrectly replaced. Replace with only the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

ADVARSEL!

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

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Overview

The MC524 Monitor Interface centralizes control room monitor and communication signals in one box and places them under remote control by the system operator. The MC524 is a digitally controlled analog signal router and level control device with a built in Talk Back microphone circuit in a 2RU enclosure.

The MC524 receives the 22 monitor busses and two solo busses from the System 5 monitor matrix output and provides a control room output to three speaker sets, four SLS/Cue monitor outputs as well as post preamp talk and listen mic outputs.

The SC253i Interface Pilot digitally controls the MC524 over a 15-pin control cable with a maximum length 100 m. The system operator can control all MC524 parameters from the System 5 control surface. There is only one MC524 in a System 5 configuration.

Features

Mic Inputs

Mic level inputs are provided for four Listen and two Talk mics on a 38-pin Elco connector. An analog gain stage provides boost or attenuation for mic level signals. Talk Back mic inputs include phantom power and a compressor.

Line Inputs

There are 24 line level inputs for Control Room feeds, Monitor A–D, and Solo. Line level inputs have attenuation only.

Line Outputs

Line outputs are on 90-pin Elco connectors for eight Monitor A (up to 7.1 monitoring), two each for Monitor B–D, eight Control Room Main (up to 7.1 monitoring), six Control Room Alt 1 (up to 5.1 monitoring), two Control Room Alt 2, four Listen preamp, two Talk preamp out, and two Solo outputs.

All cabling is provided from the digital input to the final user connections of the output patchbay. See the cabling diagrams in the *User Reference* section.

Applications

The MC524 allows the System 5 engineer to adjust all Control Room communications (Level Control, Cut, Dim and speaker selection) from the console Center Section. We recommend installing the MC524 in the Control Room.

Front Panel

Figure 1 MC524 Front Panel

Power Switch: The power switch turns the unit on/off.

Since the MC524 is digitally controlled via software, the power switch is the only front panel control.

Rear Panel

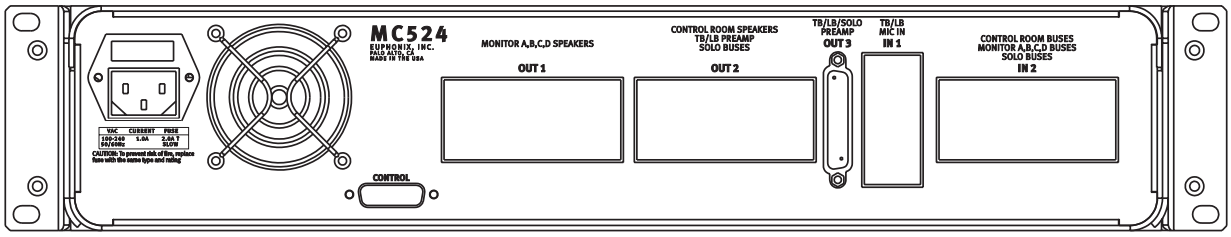

Figure 2 MC524 Rear Panel

In 1 (38-pin Elco): Talk Back, Listen Back and Mic inputs. This connector receives four stereo listen channels and two stereo talk mic inputs. All signals input at this port can be level boosted or attenuated. In standard patch configuration, input cable fans out to 12 XLR females.

In 2 (90-pin Elco): Control Room Busses, Monitor A, B, C, D, and Solo busses inputs. This connector receives eight Monitor A channels, and two each channels for Monitor B, C, D. Signals input at this port can only be level attenuated. In standard configuration these signals are fed from the AM713 converter.

Out 1 (90-pin Elco): Monitor A, B, C, D Speaker outputs. This connector outputs eight Control Room channels, eight Monitor A channels, and two each channels for Monitor B, C, D, and Solo. The output cable fans out to two 38-pin Elco connectors for the Euphonix Patchbay.

Out 2 (90-pin Elco): This connector outputs eight Control Room Main channels, six Control Room Alt 1 channels, two Control Room Alt 2 channels, four Listen pre, two talk pre and two Solo channels. The output cable fans out to two 38-pin Elco connectors for the Euphonix Patchbay.

Out 3 (DB-25 female): This connector outputs four Listen pre, two Talk Back pre, and two Solo channels, eight Monitor A channels, and two channels each for Monitor B, C, D, and Solo. The output cable fans out to eight male XLR connectors.

Control (DB-15): Input for digital control signal from Digital Pilot. Signal format is Euphonix TCC bi-directional serial protocol. All patching, switching, and gain controls are communicated via this connection as well as MC524 IP address.

AC Line In (IEC) and **Fuse Tray**: The power connector accepts standard IEC power cords. 110, 220, or 240 VAC, 50/60 Hz can be applied at this connector.

Specifications

Table 1 MC524 Performance Specifications

Main Inputs	**Solo, CR 7, Mon A, B, C, D**
Description	Electronically balanced, transformerless, differential input
Gain	Variable from 0 dB (unity) to -72 dB
Optimum Input Levels	Set to 0 dBFS = +27 dBU. Designed to be fed from Euphonix MA703 DAC.
Maximum Input Level Before Clipping	+28 dBU (sine wave)
Maximum Input Voltages	±16 VDC, ±25 VAC (common mode), ±50 VAC (differential)
Input impedance	10 kΩ ±10% each leg, 20 Hz – 20 kHz
CMRR	>40 dB (50 dB typical), 20 Hz – 20 kHz
Talk Back And Listen Mic Inputs	**T1, T2, L1–L4**
Description	Electronically balanced, transformerless, differential input with automatic level optimization
Gain	AGC circuit optimizes front end gain to produce approx. +8 dBU signal; this is variable from +8 to -64 dBU at the monitor outputs
Maximum Input Level Before Clipping	10 dBU (sine wave)
Maximum Input Voltages	±50 VDC, ±2.5 VAC (common mode), ±5 VAC (differential)
Phantom Power	48 V available, link selectable on PCB
Frequency Response	Attenuated LF and HF response, -3 dB at 200 Hz and 10 kHz
Monitor Outputs	
Description	Electronically balanced and floating, differential output
Maximum Output Level	+28 dBU (sine wave)
Output Impedance	100 Ω ±10%, balanced or unbalanced, 20 Hz – 20 kHz
DC Offset	< ±5 mV with respect to chassis GND
Full Signal Path	**Main Input To Monitor Output**
Frequency Response	0/-0.4 dB, 20 Hz – 20 kHz (ref. 1 kHz)
Signal Breakthrough with Full Cut	<-110 dB, 20 Hz – 20 kHz
Distortion	<0.005%, 20 Hz – 20 kHz, +15 dBU output level
Crosstalk	< -100 dB at 1 kHz; < -90 dB at 20 kHz
Output Noise	<-90 dBU RMS (unweighted); >117 dB of dynamic range at unity gain

Table 2 MC524 Environmental and Power Specifications

Operating Temperature	5–35°C
Power Requirements	100–240 VAC, 50/60Hz
Power Consumption	1A

Table 3 MC524 Physical Dimensions

Height	3.5 inches
Width	19 inches
Depth	18.6 inches
Weight	17 lb

Leave about six inches behind the MC524 for cable connections.

Authorized Service Personnel Only:

Phantom Power: 48 V Jumper Settings

Phantom power is enabled by fitting the link to short pins 1 and 2. If not required (i.e., using a dynamic mic) then it should be set to short pins 2 and 3. Pin 1 position can be ascertained by looking for the square pad on the solder side.

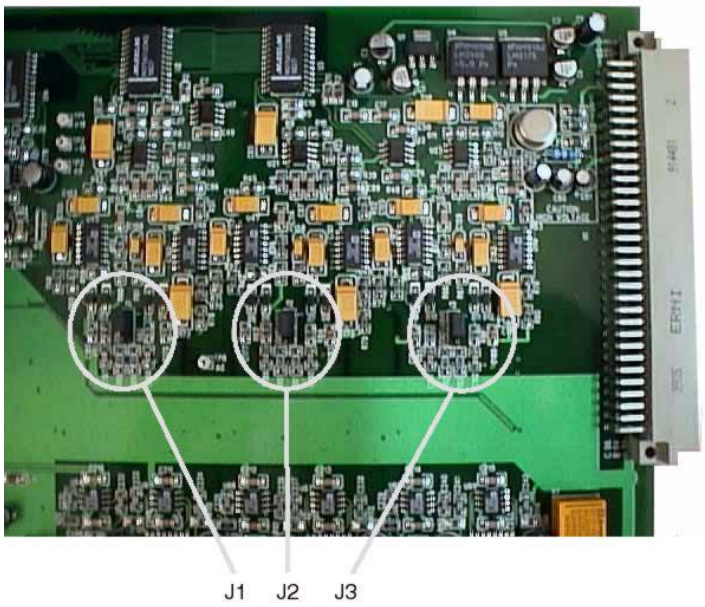

Figure 3 Pins to set Phantom Power

Note that the standard Talk Back mic on the console (wired to T1) is a condenser type which requires phantom power. Table 4 shows the mapping of the jumpers:

Table 4 Upper and Lower Board Jumper Mappings

Upper Board		Lower Board	
J1	Talkback 1 (T1)	**J1**	Listen 2 (L2)
J2	Talkback 2 (T2)	**J2**	Listen 3 (L3)
J3	Listen 1 (L1)	**J3**	Listen 4 (L4)

User Reference

Standard Configuration

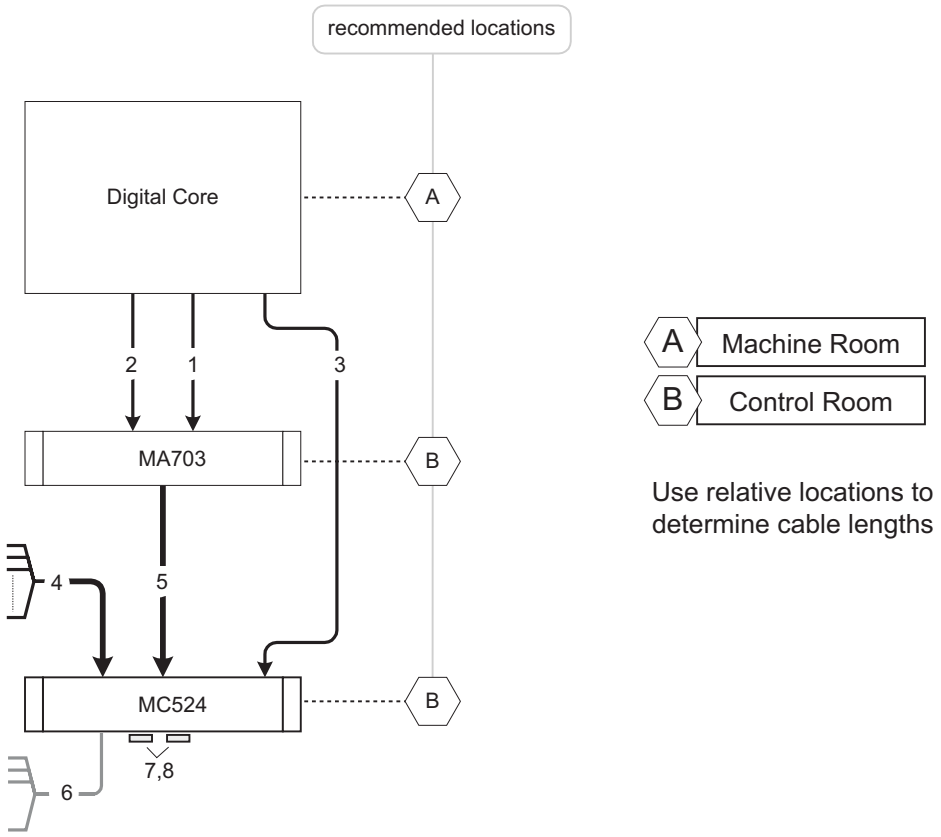

Figure 4 MC524 Standard Cable Diagram

The standard lengths specified in Table 5 are supplied so the monitor interface can be located in the control room. Custom lengths are available and cable kits must be ordered separately.

Table 5 MC524 Standard Cable Specification

Cable	Qty	Description	10M Part #	20M Part#	Length
		Accessory cable kits by special order	936-07084-01	936-07156-01	
1	1	**MADI Output**: RG59 75 Ω coax	032-07230-00	032-07306-00	
2	1	**AES/EBU Sync**: one male XLR <> one female XLR	030-07085-01	030-07153-01	
3	1	TCC Control from 253i Interface Pilot	030-06983-01	030-06985-01	
4	1	**TB/LB Mic**: one male Elco 38 <> 12 female XLR	030-06919-01		2 m
5	1	**CR/Mon/Solo Bus**: one male Elco 90 <> 24 female XLR	030-07225-01		1 m
6	1	**TB and LB Mic Pre Out**: one DB-25 <> eight male XLR	032-07038-00		3 m
7	2	Elco 90-pin Connector w/hood	100-07470-00		NA
8	180	Elco Crimp Pins	100-02100-00		NA

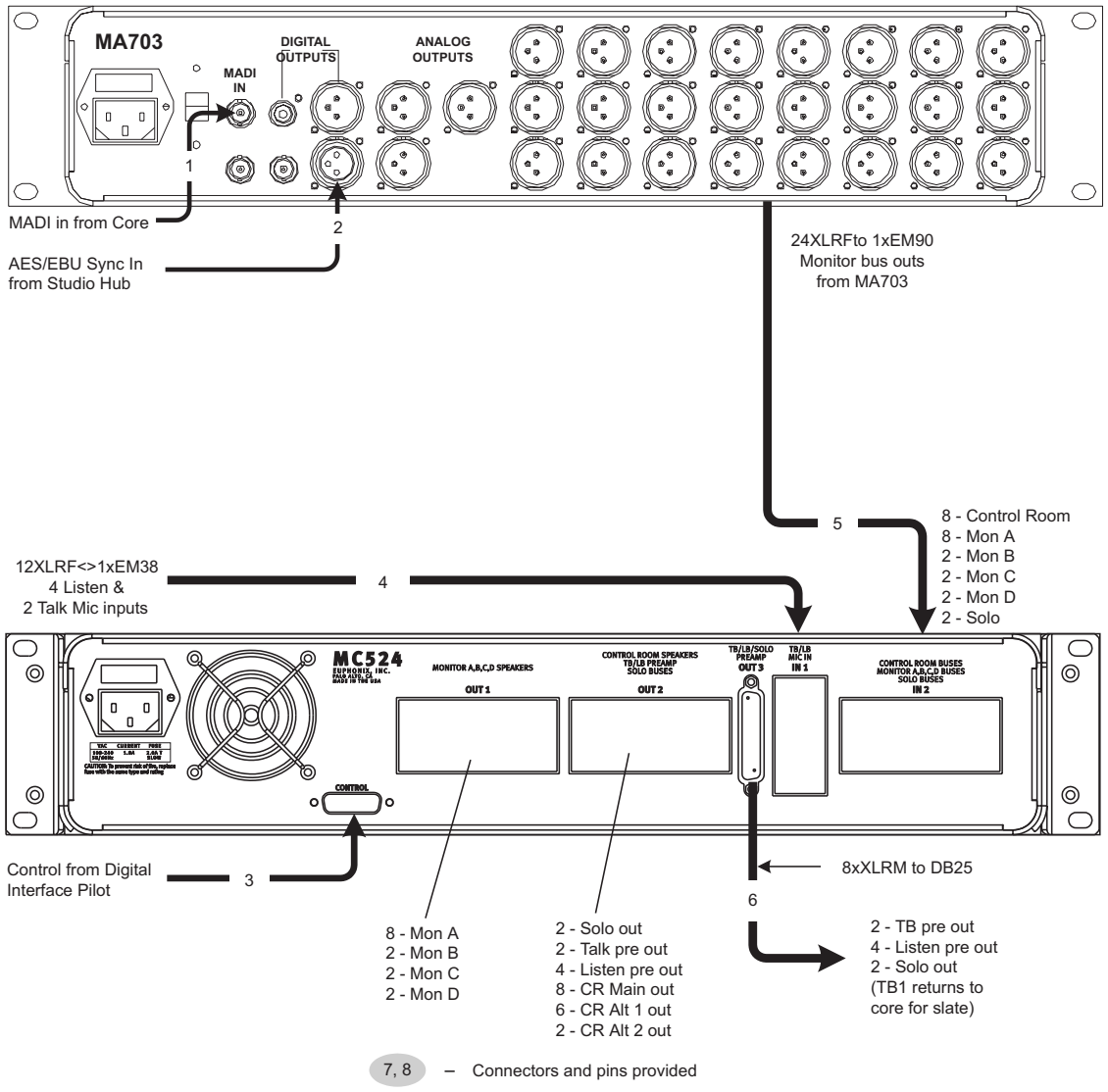

Figure 5 MC524 Standard Configuration

Input/Output Connections

Table 6 In 1 Elco 38 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	M1	Talk 1	A	E	L
2	M2	Talk 2	B	F	M
3	M3	Listen 1	C	H	N
4	M4	Listen 2	D	J	P
5	M5	Listen 3	DD	JJ	PP
6	M6	Listen 4	EE	KK	RR
7			FF	LL	SS
8			HH	MM	TT
9			R	S	V
10			T	U	W
11			X	Z	AA
12			Y	BB	CC

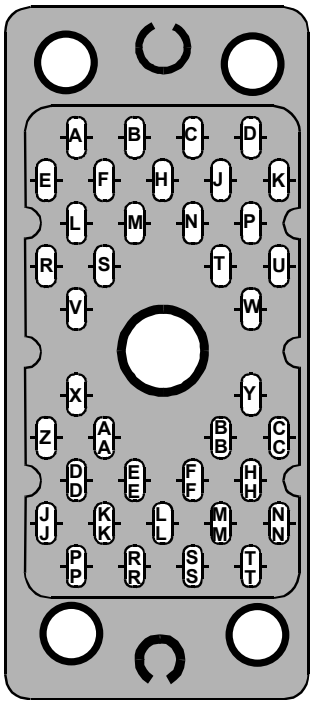

Figure 6 Elco 38 Connector

Table 7 In 2 Elco 90 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	L3	Cntrl Rm (L)	A	H	R
2	L4	Cntrl Rm (C)	B	J	S
3	L5	Cntrl Rm (R)	C	K	T
4	L6	Cntrl Rm (Sl)	D	L	U
5	L7	Cntrl Rm (Sr)	E	M	V
6	L8	Cntrl Rm (B)	F	N	W
7	L9	Cntrl Rm (Li)	X	AE	AM
8	L10	Cntrl Rm (Ri)	Y	AF	AN
9	L11	Mon A (L)	Z	AH	AP
10	L12	Mon A (C)	AA	AJ	AR
11	L13	Mon A (R)	AB	AK	AS
12	L14	Mon A (Sl)	AC	AL	AT
13	L15	Mon A (Sr)	BJ	BS	BY
14	L16	Mon A (B)	BK	BT	BZ
15	L17	Mon A (Li)	BL	BU	CA
16	L18	Mon A (Ri)	BM	BV	CB
17	L19	Mon B (L)	BN	BW	CC
18	L20	Mon B (R)	BP	BX	CD
19	L21	Mon C (L)	CF	CN	CW
20	L22	Mon C (R)	CH	CP	CX
21	L23	Mon D (L)	CJ	CR	CY
22	L24	Mon D (R)	CK	CS	CZ
23	L1	Solo (L)	CL	CT	DA
24	L2	Solo (R)	CM	CU	BD

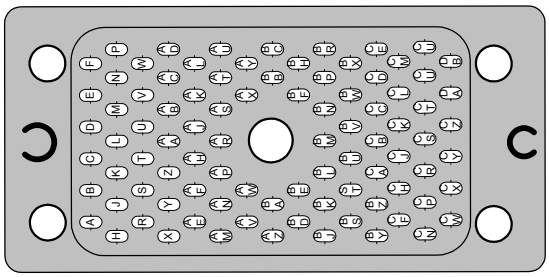

Figure 7 Elco 90 Connector

Table 8 Out 1 Elco 90 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	BO11	Mon A (L)	A	H	R
2	BO12	Mon A (C)	B	J	S
3	BO17	Mon A (R)	C	K	T
4	BO18	Mon A (Sl)	D	L	U
5	BO19	Mon A (Sr)	E	M	V
6	BO20	Mon A (B)	F	N	W
7	BO21	Mon A (Li)	X	AE	AM
8	BO22	Mon A (Ri)	Y	AF	AN
9	BO23	Mon B (L)	Z	AH	AP
10	BO24	Mon B (R)	AA	AJ	AR
11	BO25	Mon C (L)	AB	AK	AS
12	BO26	Mon C (R)	AC	AL	AT
13	BO27	Mon D (L)	BJ	BS	BY
14	BO28	Mon D (R)	BK	BT	BZ
15			BL	BU	CA
16			BM	BV	CB
17			BN	BW	CC
18			BP	BX	CD
19			CF	CN	CW
20			CH	CP	CX
21			CJ	CR	CY
22			CK	CS	CZ
23			CL	CT	DA
24			CM	CU	BD

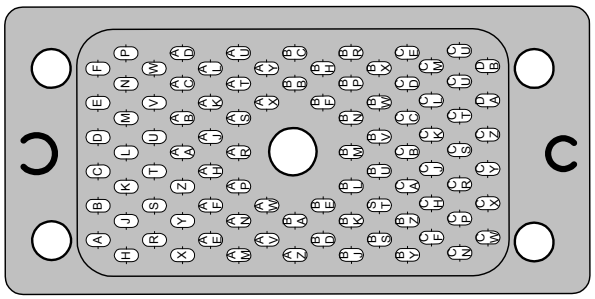

Figure 8 Elco 90 Connector

Table 9 Out 2 Elco 90 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	BO31	Solo L	A	H	R
2	BO32	Solo R	B	J	S
3	TL1	Talk 1	C	K	T
4	TL2	Talk 2	D	L	U
5	TL3	Listen 1	E	M	V
6	TL4	Listen 2	F	N	W
7	TL5	Listen 3	X	AE	AM
8	TL6	Listen 4	Y	AF	AN
9	BO3	CR main (L)	Z	AH	AP
10	BO4	CR main (C)	AA	AJ	AR
11	BO5	CR main (R)	AB	AK	AS
12	BO6	Cntrl Rm (Sl)	AC	AL	AT
13	BO7	Cntrl Rm (Sr)	BJ	BS	BY
14	BO8	CR main (B)	BK	BT	BZ
15	BO9	CR main (Li)	BL	BU	CA
16	BO10	CR main (Ri)	BM	BV	CB
17	BO13	CR Alt 1 (L)	BN	BW	CC
18	BO14	CR Alt 1 (C)	BP	BX	CD
19	BO15	CR Alt 1 (R)	CF	CN	CW
20	BO16	CR Alt 1 (Sl)	CH	CP	CX
21	BO29	CR Alt 1 (Sr)	CJ	CR	CY
22	BO30	CR Alt 1 (B)	CK	CS	CZ
23	BO1	CR Alt 2 (L)	CL	CT	DA
24	BO2	CR Alt 2(R)	CM	CU	BD

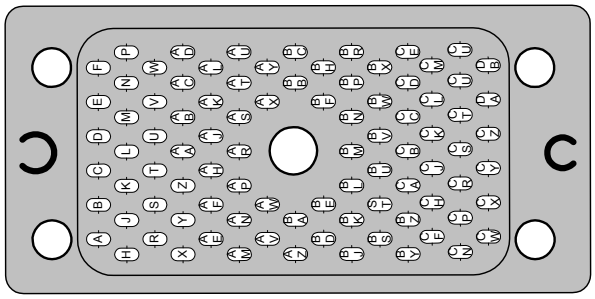

Figure 9 Elco 90 Connector

Table 10 Out 3 DB-25 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1		T1	24	12	25
2		T2	10	23	11
3		L1	21	9	22
4		L2	7	20	8
5		L3	18	6	19
6		L4	4	17	5
7		Solo L	15	3	16
8		Solo R	1	14	2

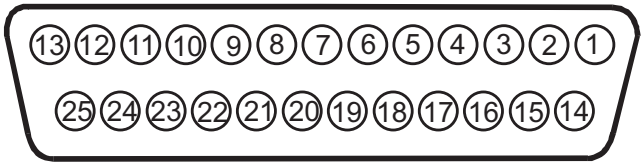

Figure 10 DB-25 Connector

Optional Configurations

Monitor Output Patch

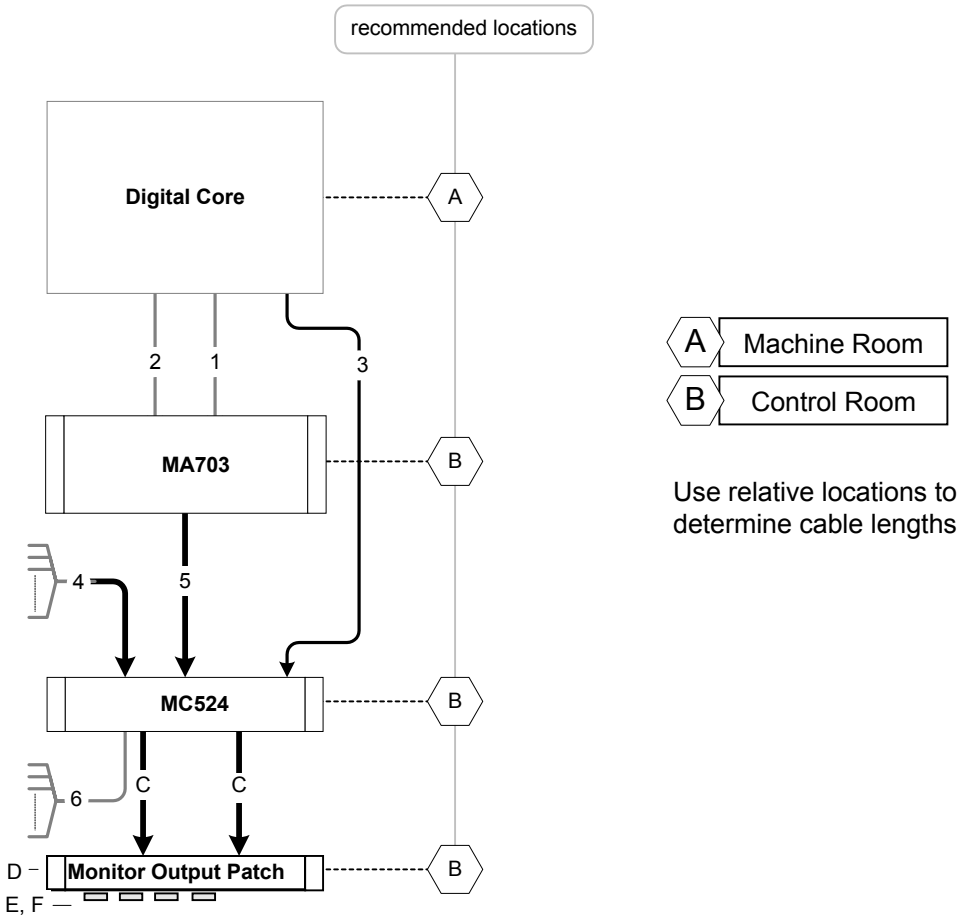

Figure 11 Monitor Output Patch Cable Diagram

Patchbay, cables, pins and connectors are ordered separately as required.

Table 11 Monitor Output Patch Cable Specifications

Part	Qty	Description	Part #	Length
C	2	**MC524 Patch Connect**: one male Elco 90 <> two male Elco 38	030-07036-01	2 m
D	1	Tie Line Patch	950-03770-01	NA
E	4	Elco 38-Pin Connector w/hood	100-02099-00	NA
F	160	Elco Crimp Pins (Supplied with standard configuration)	100-02100-00	2 m

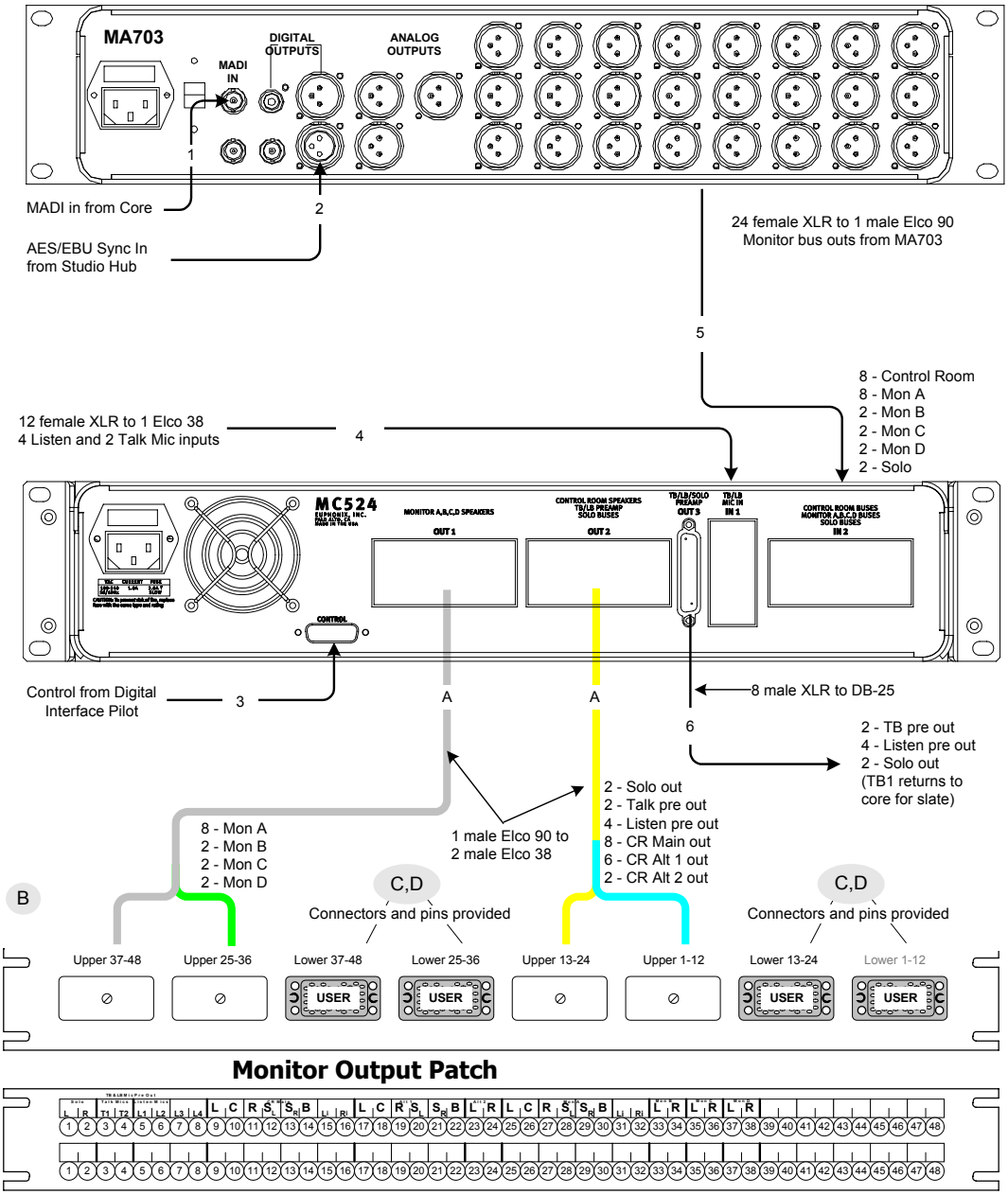

Figure 12 Monitor Output Patch Configuration

Monitor Insert Patch

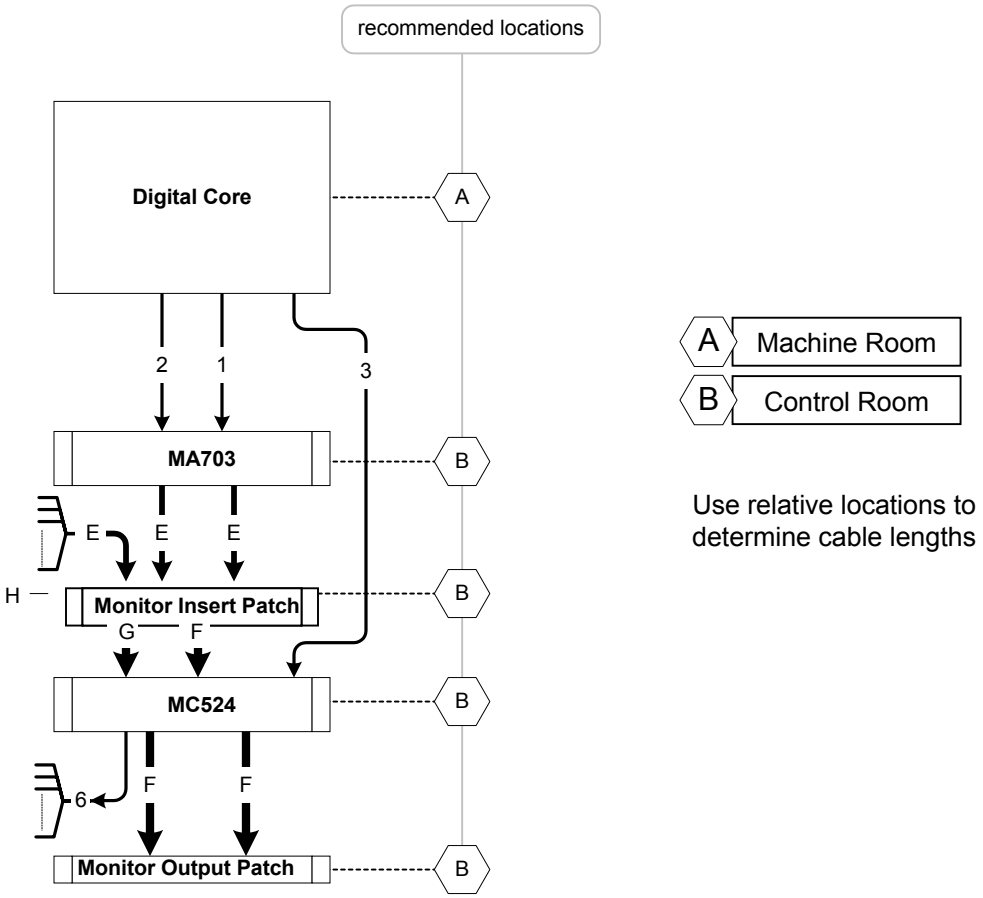

Figure 13 Monitor Insert Patch Cable Diagram

Patchbay, cables, pins and connectors are ordered separately as required.

Table 12 Monitor Insert Patch Cable Specification

Part	Qty	Description	Part #	Length
E	3	**TB/LB Mic, Bus**: one male Elco 38 <> 12 female XLR	030-06919-01	2 m
F	3	**MC524 Patch Connect**: one male Elco 90 <> two male Elco 38	030-07036-01	2 m
G	1	**MC524 Patch Connect**: one male Elco 38 <> one male Elco 38	030-07158-01	2 m
H	1	Tie Line Patch	950-03770-01	NA

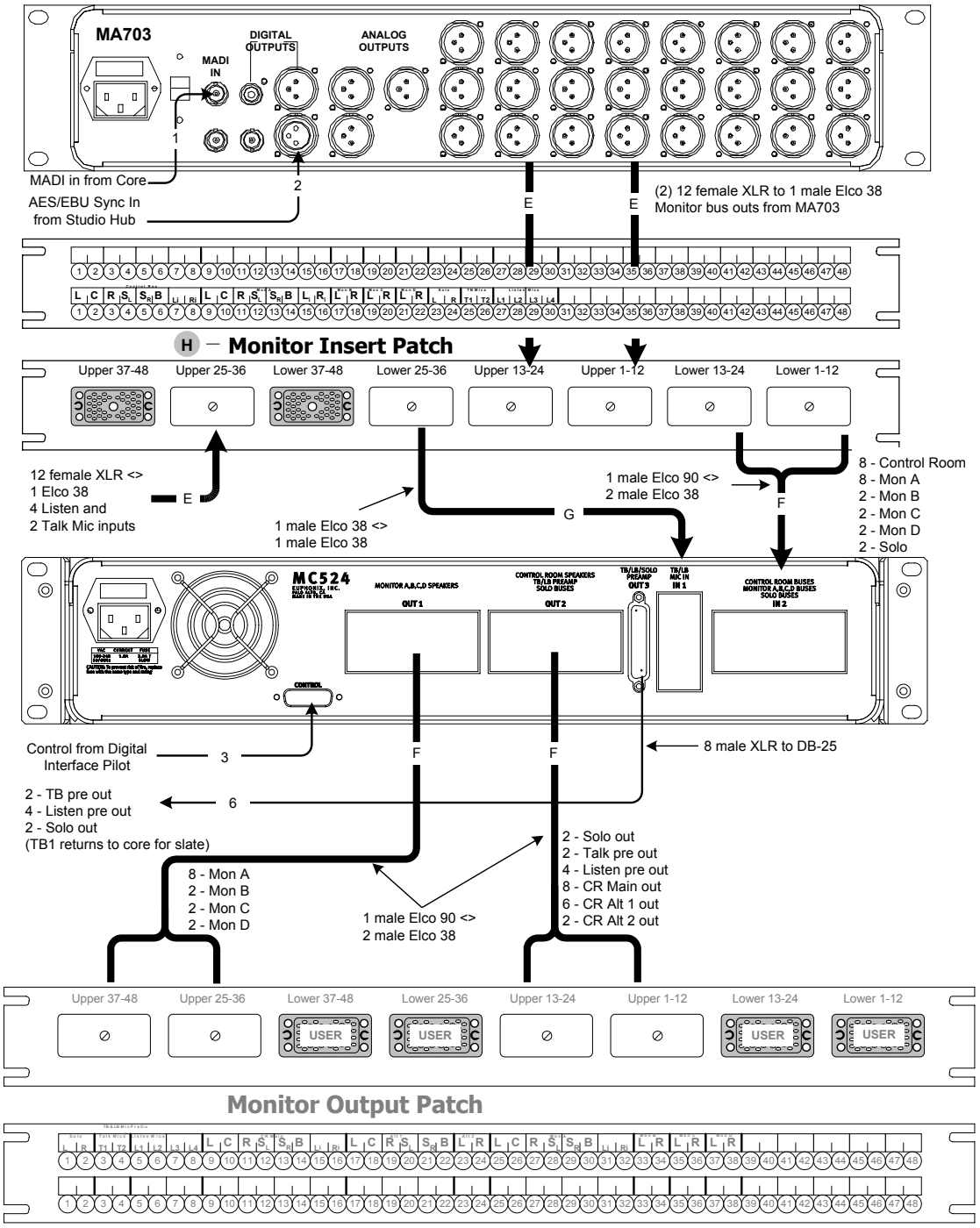

Figure 14 Monitor Insert Patch Configuration

Table 13 Tie Line Patch Elco 38 Pinout

Signal Name	Hot	Cold	Shield	Connector Pair Number
Channel 1, 13, 25, 37 Input/Output	pin A	pin E	pin L	1
Channel 2, 14, 26, 38 Input/Output	pin B	pin F	pin M	2
Channel 3, 15, 27, 39 Input/Output	pin C	pin H	pin N	3
Channel 4, 16, 28, 40 Input/Output	pin D	pin J	pin P	4
Channel 5, 17, 29, 41 Input/Output	pin DD	pin JJ	pin PP	5
Channel 6, 18, 30, 42 Input/Output	pin EE	pin KK	pin RR	6
Channel 7, 19, 31, 43 Input/Output	pin FF	pin LL	pin SS	7
Channel 8, 20, 32, 44 Input/Output	pin HH	pin MM	pin TT	8
Channel 9, 21, 33, 45 Input/Output	pin R	pin S	pin V	9
Channel 10, 22, 34. 46 Input/Output	pin T	pin U	pin W	10
Channel 11, 23, 35, 47	pin X	pin Z	pin AA	11
Channel 12, 24, 36, 48 Input/Output	pin Y	pin BB	pin CC	12

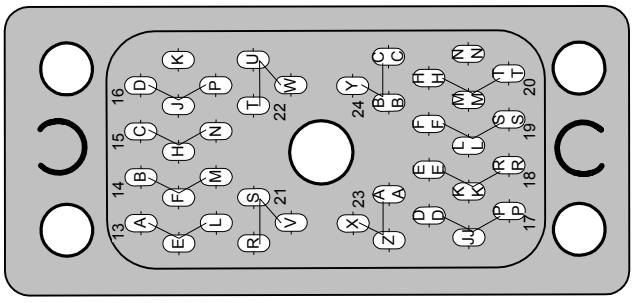

Figure 15 Rear View of Elco Male 38-pin Connector (Insert pins from this side)

Connector Specifications

38-pin male w/ hood Elco P/N 00-8016-038000-519 (Euphonix P/N 100-02099)

Use crimp pins Elco P/N 60-8017-031300-339 (Euphonix P/N 100-02100)